03 Review - Part 3: Linear Relationships

Evaluate (2x - 1) for

a) x = 0 $(2(0)-1) = -1$

b) x = 1 $(2(1)-1) = 1$

c) x = 2 $(2(2)-1) = 3$

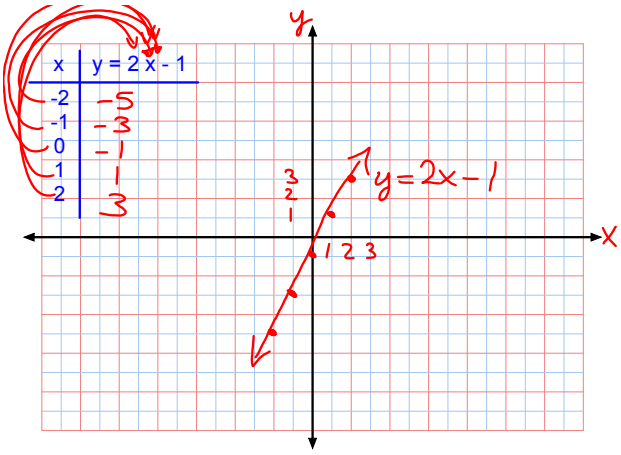
x	y
0	-1
1	1
2	3

Each value of x will produce a different value for (2x - 1).

We can graph the relationship between x and (2x - 1) by letting y = 2x - 1.

Each pair (x, y) is a point on the x-y plane.

x	y = 2x - 1
-2	-5
-1	-3
0	-1
1	1
2	3



A linear relationship occurs when both variables are linear (i.e., they have an exponent of 1).

For example,

(a) $y = 2x - 1$ (b) $2x - y - 1 = 0$ (c) $2x - y = 1$

It is possible to graph a linear relationship using:
(1) a table of values
(2) the y-intercept and x-intercept
(3) the y-intercept and the slope (m)

To graph a straight line, only **two points** are required (but a third point is a good check).

Using the intercepts:

The x-intercept is the **point** where the line crosses the x axis

The y-intercept is the **point** where the line crosses the y axis.

$2x - y - 1 = 0$

To find the x-int, set $y = 0$

$2x - y - 1 = 0$

$2x - (0) - 1 = 0$

$2x - 1 = 0$

$\frac{2x}{2} = \frac{1}{2}$

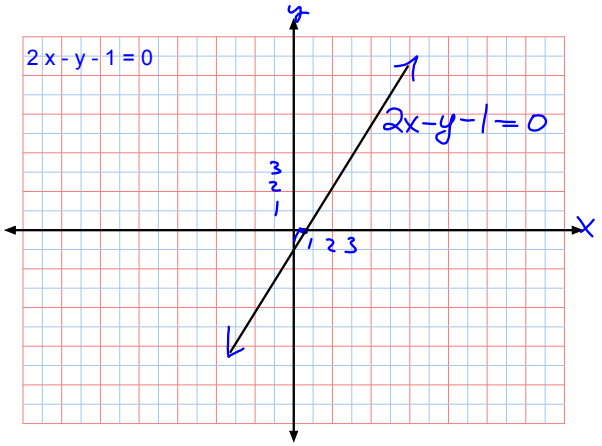
$x = \frac{1}{2}$

$(\frac{1}{2}, 0)$

To find the y-int, set $x = 0$

$y = -1$

$(0, -1)$



Using the y-intercept and slope:

Recall:

$$m = \text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\Delta y}{\Delta x}$$

change

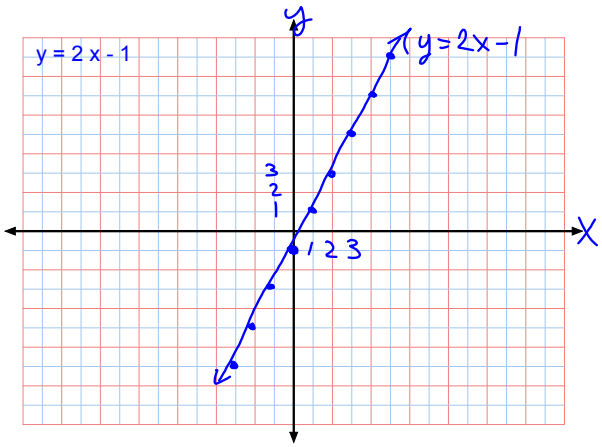
The y-int is our starting point, and we use the slope to find the next point.

A linear equation in slope-intercept form is

$$y = m x + b$$

slope y-intercept

$2x+4y+4=0$



Assigned Work:

p.4 - 6
2 - 4, 5ace, 7abc, 11acf

Extra practice:

A-6: p.468 # 1bd, 2abc, 3abcd, 4
A-7: p.470 # 1abc, 2ab, 3d, 4bc, 5bc, 6